

In the Claims:

Cancel claims 1-12 and 15. Amend claims 13 and 14 and add claims 16-33 as follows.

1   Claims 1-12 (Cancelled).

1   13. (Currently Amended) A method for analyzing the  
2   operational condition of snow removal equipment removably  
3   attached to a vehicle, said method comprising the steps of:  
4                 removably coupling a diagnostic interface to the  
5   snow removal equipment, the diagnostic interface including  
6   an analysis module;

7                 maintaining a database of information relating to  
8   performance and maintenance of the snow removal equipment;  
9                 obtaining real time operating data indicating the  
10   condition of the snow removal equipment from the diagnostic  
11   interface with an analysis module;

12                 diagnosing malfunctions of the snow removal  
13   equipment by enabling the analysis module to compare  
14   comparing the real time operating data obtained with  
15   predetermined data performance and maintenance information  
16   stored in the database concerning the operational condition  
17   of the snow removal equipment; and

18                 displaying information related to the real time  
19   operating data on a display module associated with the  
20   analysis module.

1   14. (Currently Amended) The method as defined in claim 13,  
2   wherein diagnosing malfunctions of the snow removal  
3   equipment includes enabling the analysis module to correlate  
4   a computer is used to compare a computer is used to compare  
5   the real time operating data relating to the operational  
6   condition of the snow removal equipment with reference usage  
7   data relating to times of occurrence of an out of range

8     condition for a given operating parameter of the snow  
9     removal equipment.

1     Claim 15 (Cancelled)

1     16 (New) The method according to claim 13, wherein the  
2     step of diagnosing malfunctions of the snow removal  
3     equipment includes downloading to said diagnostic interface,  
4     only performance and maintenance information for the snow  
5     removal equipment.

1     17. (New) A method for analyzing the operational condition  
2     of snow removal equipment removably attached to a vehicle,  
3     the snow removal equipment being adapted for mounting on a  
4     vehicle, said method comprising the steps of:

5                 removably coupling a diagnostic interface to the  
6     snow removal equipment;

7                 coupling an analysis module to the diagnostic  
8     interface for analyzing operating and usage data relating to  
9     the snow removal equipment,

10                obtaining operating data and usage data for the  
11     snow removal equipment, the usage data including operating  
12     data regarding the operational state of components of the  
13     snow removal equipment and further data indicative of times  
14     of occurrences of at least one of excessive pressure and  
15     force; and

16                correlating the operating data with the further  
17     data to determine whether the snow removal equipment has  
18     been misused.

1     18. (New) The method according to claim 17, wherein the  
2     usage data include at least one of continuity of wiring of  
3     electrical circuits of the snow removal equipment, open and  
4     short circuit conditions for solenoids, pressure values for  
5     hydraulic lines, impact data, and cycle times of components.

1 19. (New) The method according to claim 17, including  
2 enabling the analysis module to produce a historical record  
3 for use in analyzing usage data to determine a cause of a  
4 failure of the snow removal equipment.

1 20. (New) The method according to claim 19, wherein the  
2 snow removal equipment is a snow plow including a snow plow  
3 blade, and including the step of causing the analysis module  
4 to correlate operating data indicative of a first condition  
5 for the snow plow blade with usage data indicative of a  
6 second condition for the snow plow blade and producing an  
7 output indicating that the snow plow is being used in an  
8 application that is likely to cause a failure of the snow  
9 plow.

1 21. (New) The method according to claim 20, wherein  
2 obtaining usage data includes the step of detecting an  
3 overload condition based upon an overpressure condition in a  
4 hydraulic line of the snow plow.

1 22. (New) The method according to claim 20, wherein  
2 obtaining usage data includes the step of detecting an  
3 overload condition based upon force on the snow plow blade.

1 23. (New) The method according to claim 22, including  
2 obtaining operational time of at least one component of the  
3 snow plow.

1 24. (New) Apparatus for analyzing an operational condition  
2 of a snow plow removably mounted to a vehicle, the snow plow  
3 including a snow plow blade; said apparatus comprising:  
4           a snow plow interface mounted to the snow plow;  
5           a data acquisition module on the snow plow,  
6 removably coupled to the snow plow interface, the data

7 acquisition module providing real time data indicating the  
8 operational condition of the snow plow;

9               an overload condition monitor coupled to the snow  
10 plow for providing usage data, including data indicative of  
11 load and impact forces applied to the snow plow and  
12 operational time for the snow plow, said overload condition  
13 monitor being coupled to the data acquisition module; and

14               an analysis module removably coupled to the data  
15 acquisition module for receiving the real time data and the  
16 usage data, the analysis module processing the real time  
17 data and the usage data, including comparing the real time  
18 data with reference data, to determine if the snow plow has  
19 been misused.

1 25. (New) The apparatus according to claim 24, wherein  
2 said overload condition monitor monitors load and impact  
3 forces on the snow plow.

1 26. (New) The apparatus according to claim 24, wherein  
2 said overload condition monitor is located on the snow plow.

1 27. (New) The apparatus according to claim 24, wherein  
2 said overload condition monitor is coupled to a hydraulic  
3 system of the snow plow.

1 28. (New) A diagnostic apparatus for analyzing the  
2 operational condition of a snow plow removably attached to a  
3 vehicle, the snow plow including a snow plow blade, said  
4 diagnostic apparatus comprising:

5               a diagnostic interface carried by the snow plow;  
6               a data acquisition module on the snow plow for  
7 obtaining operating data relating to the snow plow, the  
8 operating data indicating the operational state of  
9 components of the snow plow, the data acquisition module  
10 coupled to the diagnostic module; and

11                   an analysis module coupled to the diagnostic  
12 interface for receiving and analyzing the snow plow  
13 operating data, and the usage data indicative of the  
14 application of an excessive pressure condition in a  
15 hydraulic system of the snow plow or a load or impact force  
16 on the snow plow, the analysis module correlating the usage  
17 data with stored reference data to determine if the snow  
18 plow has been misused.

1 29. (New) The diagnostic apparatus according to claim 28,  
2 wherein the operating and usage data include at least one of  
3 continuity of wiring of electrical circuits of the snow  
4 plow, open and short circuit conditions for solenoids,  
5 pressure values for hydraulic lines, impact data, and cycle  
6 times of components.

1 30. (New) The diagnostic apparatus according to claim 28,  
2 wherein the analysis module produces a historical record for  
3 use in analyzing usage operating and usage data to determine  
4 a cause of a failure of the snow plow.

1 31. (New) The diagnostic apparatus according to claim 28,  
2 wherein the analysis module correlates first operating data  
3 indicative of a first condition for the snow plow blade with  
4 second operating data indicative of a second condition for  
5 the snow plow blade and produces an output indicating that  
6 the snow plow is being used in an application that is likely  
7 to cause a failure of the snow plow.

1 32. (New) The diagnostic apparatus according to claim 28,  
2 and including at least one detector for detecting an  
3 overload condition based upon an overpressure condition in a  
4 hydraulic line of the snow plow.

1   33. (New) The diagnostic apparatus according to claim 28,  
2   and including at least one detector mounted on the snow  
3   removal equipment for producing said load and impact force  
4   data.